2 ISSUES AND KEY QUESTIONS

2.1 ISSUE 1 - WILDLAND FIRE AND FUELS: CURRENT AND HISTORIC CONDITION AND POTENTIAL TRENDS

Past management activities, which includes timber harvest, the suppression and exclusion of fire, livestock grazing, and road construction, have altered ignition sources as well as the composition and structure of fuel loads in the watershed. Total fuel loads, as well as the horizontal and vertical continuity of fuels, have increased, which has resulted in a change in fire intensity and severity. The potential for widespread, severe, stand-replacing fires has increased in forested stands where low intensity surface fires were predominant prior to Euro-American settlement.

Key Question 1 – What are the landscape level patterns and trends of fuel loads within the watershed and how have these patterns changed through time?

Fuel Loads: Dead and downed wood, live fuels.

Fuel Continuity: Fuel vertical continuity – the presence of ladder fuels (midstory), horizontal continuity throughout the watershed, natural fuel breaks (ridgelines, rock outcrops, riparian zones).

Key question 2 – What have been the causes of landscape-level changes in fuel loads and continuity in the watershed?

Forest Dynamics and Disturbance Regimes: Changes in fire history, insect and disease outbreaks, and the resulting changes in fuel loads.

Management and Anthropogenic Disturbances: Fire exclusion/suppression; timber harvesting and livestock grazing and their effects on fuel loads and fire breaks; roads and their possible impacts as fuel breaks, points of fire suppression, and as an ignition source.

Key Question 3 – How have historic management practices altered the frequency, severity, magnitude, ignition source of wildland fires (the fire regime) within the watershed?

Historic Fire Regimes: Frequency, size, and magnitude of fires prior to Euro-American settlement within the watershed.

Fire Potential: Changes in fuel models and the potential changes in fire behavior under current scenarios.

2.2 ISSUE 2 – VEGETATION: CURRENT AND HISTORIC CONDITIONS AND POTENTIAL TRENDS

Past management activities including the suppression and exclusion of fire have altered the composition, structure, and functioning of the upland vegetation within the watershed. Activities such as timber harvesting, mining, and livestock grazing have also contributed to changes in vegetation structure and composition in both upland and riparian zones.

Key Question 1: What are the landscape-level patterns and trends for plant communities within the watershed, and how have these patterns changed through time?

Vegetation Composition and Structure: Canopy cover, forest layers (including shrubs and forbs), size classes, and species composition.

Distribution of Indicator Species: Sensitive plant species, aspen stands, non-native and noxious weeds, insects, and culturally important species.

Key Question 2: What has been the source of the landscape-scale changes in vegetation pattern throughout the watershed?

Forest Dynamics and Natural Disturbance Regimes: Fire history, disease, and the resulting changes in vegetation succession; species composition, forest structure and ecosystem health.

Management and Anthropogenic Disturbances: Fire exclusion, livestock grazing, timber harvest, mining, roads, recreation, and development.

Key Question 3: How have historic management practices altered the frequency, severity, magnitude, and distribution of landscape-scale natural disturbances within the watershed?

Fire, Insects, and Disease History: Frequency, distribution, pattern, and magnitude throughout the watershed.

Fire Potential: Expected current and future fire patterns based fuel model analysis from current vegetation data (PI data).

Grazing History: Current vegetation pattern and condition of upland and riparian zones and how pattern and condition relate to livestock grazing.

2.3 ISSUE 3 - AQUATIC SPECIES AND HABITAT

A long history of mining, agricultural practices, livestock grazing, timber harvest, road building, human uses, and fire exclusion have altered the natural disturbance regime and connectivity between upland and riparian zones; in-stream disturbance has contributed to the decay of quality in-stream habitat for threatened and endangered species. The changing landscape patterns attributed to past and current management activities affect both the physical and biological processes throughout the aquatic ecosystems within the watershed.

Key Question 1: What are the long-term patterns and trends of the riparian and aquatic ecosystems within the watershed, and what factors are limiting to the success of aquatic species?

Upland-to-Riparian Floodplain Connectivity: Juniper encroachment into upland stands limiting water quantities into stream; historic and current ecological status and trends for riparian vegetation; conifer encroachment into meadows and distribution and abundance of aspen stands; historic and current inputs from riparian vegetation affecting macroinvertebrate populations.

Climatic Conditions: Monthly and annual precipitation and temperature by sub-watershed; past and predicted snow pack dynamics; climatic conditions influence on watershed hydrology.

In-stream Habitat Requirements: Fish passage and road (culvert) conditions; sediment loading from eroding banks; stream shading; frequency of large, deep pools (greater than 3 feet deep); frequency and distribution of Coarse Wood Debris (CWD) and potential recruitment of CWD into streams; availability of suitable spawning and rearing habitat (summer and winter).

Stream Channel Characteristics: Channel morphology; bank stability; channel types; width/depth ratios; habitat connectivity (road crossing barriers, subsurface flows, etc.).

Water Quality Parameters: Temporal and spatial water temperatures, historic and current summertime water temperature patterns within the watershed, land management effect on summertime water temperatures.

Water Quantity Parameters: Mechanisms that produce peak flows; water table changes due to a loss of bank and wetland storage; frequency and magnitude of peak flows; past peak flow magnitudes affected by changes in vegetation patterns due to fuels reduction activities, past peak flow magnitudes affected by changes in vegetation patterns due to catastrophic fire in the absence of fuels reduction activities and road building; peak flow magnitude affected by changes in road drainage networks.

Aquatic Species: Historic and current distribution and abundance of important fisheries such as bull trout; Proposed, Endangered, Threatened, and Sensitive (PETS) within the watershed.

Key Question 2: What have been the causes of changes in riparian and aquatic ecosystems within the watershed?

Management activities affect the watershed. Management activities such as mining, dams, timber harvest, road building, livestock grazing, water withdrawals, fire exclusion, fishing, and recreation occur in Canyon Creek. How have the important habitat parameters listed in Key Question 1 been affected by these management activities?

2.4 ISSUE 4 - TERRESTRIAL WILDLIFE SPECIES AND HABITAT

Past management activities, such as timber harvest, livestock grazing, and fire suppression have changed natural disturbance processes, the distribution of wildlife populations, and the condition of wildlife habitat.

Key Question 1: How has the diversity and distribution of PETS and their habitat changed from historical conditions?

Habitat Conditions: PETS past and present habitat conditions, species composition, and distributions.

Key Habitats: Location of existing key habitats, areas of activities.

Key question 2: How has the diversity and distribution of non-PETS terrestrial wildlife and their habitat changed from historical conditions?

Habitat Conditions: Past and present habitat conditions, species composition, and distributions.

Key Habitats: Location of existing key habitats, areas of activities.

Key question 3: What caused the changes in diversity and distribution of PETS and other terrestrial wildlife and their habitats from historical conditions?

Management Influences: Timber harvest, livestock grazing (including wild horses), hunting and trapping, fire suppression, and roads.

2.5 ISSUE 5 - HUMAN USES

Human uses of the watershed have changed over time.

Key question 1: How have human uses, values, services, and products changed over time, and how are they expected to change in the future?

Uses and Impacts: Native American past and present uses, livestock grazing, road access, recreation uses - dispersed recreational use, hunting, horn-hunting. Special uses such as the municipal watershed and mining activities. Timber harvest opportunities and trends. Reduced wildland fire risk to local communities.